British Journal of Venereal Diseases, 1979, **55**, 382-386

Abstracts

These selected abstracts and titles from the world literature are arranged in the following sections:

Syphilis and other treponematoses (Clinical and therapy)

Yaws and syphilis (letter)
J. JEFFERISS (1979). *British Medical Journal*, **1**, 1282

Yaws and syphilis (letter)
A. L. PAHOR (1979). *British Medical Journal*, **1**, 1282

Syphilitic hearing loss (editorial)
R. ROTHENBERG (1979). *Southern Medical Journal*, **72**, 118-120

Syphilis (Serology and biological false-positive phenomenon)

Problems affecting performance of the fluorescent treponemal antibody absorption test for syphilis
E. F. HUNTER, M. R. ADAMS, L. H. ORRISON, B. J. PENDER, AND S. A. LARSEN (1979). *Journal of Clinical Microbiology*, **9**, 163-166

No qualitative differences were found in IgG FTA-ABS tests on 92 stored and 66 fresh sera examined without heating or after inactivation at 56°C for 30 minutes. IgG FTA titres on heated and unheated sera were also similar and it is recommended that the requirement for inactivating sera for the IgG FTA-ABS test should be discontinued.

In quantitative IgM FTA tests inhibition of staining at the lower serum dilutions was seen in 20 of 22 unheated sera from patients with no history of rheumatoid arthritis, 17 of whom had syphilis. No such prozones were seen with unheated sera from six syphilitic and three non-syphilitic patients, all of whom had rheumatoid arthritis.

When multispot slides are used for FTA tests, mixing of sera from adjacent spots or contamination of slides with treponemes which have become detached during the washing processes may occur and give misleading results. It is recommended that both reactive and non-reactive slides should be examined under visible light to allow a correct assessment of results.

A. E. Wilkinson

Clinical evaluation of a new screening test for syphilis
J. D. DYCHMAN, B. GATENBEIN, R. D. WENDE, AND R. P. WILLIAMS (1978). *American Journal of Clinical Pathology*, **70**, 918-921

The Syphla-Chek (SC) test is a screening test carried out on disposable plastic cards with a lipid antigen. Its performance was compared with that of the VDRL and RPR tests on 200 sera from persons presumed to be healthy (premarital tests), sera from patients with untreated primary (80), secondary (29), and latent (32) syphilis and on 146 sera from patients with treated syphilis.

None of the tests was reactive with the normal sera but 35 gave granular reactions in the SC test; one of these gave a borderline and one a reactive FTA-ABS result, but neither patient had a history of syphilis. The SC test was slightly more sensitive than the VDRL in the sera from patients with untreated primary or treated syphilis but the VDRL was more sensitive than the SC test in the small group with untreated latent infections. The RPR was intermediate in sensitivity between the other two tests. In quantitative tests the titres agreed within one doubling dilution in 90·4% for the VDRL and RPR, 98% for the VDRL and SC, and 98·2% for the RPR and SC. The SC test is thought to be equivalent to the others for screening purposes.

A. E. Wilkinson

False-positive reactions in the rapid plasma reagin-card, fluorescent treponemal antibody-absorbed, and hemagglutination treponemal syphilis serology tests
C. R. PETER, M. A. THOMPSON, AND D. L. WILSON (1979) *Journal of Clinical Microbiology*, **9**, 369-372

Syphilis (Pathology and experimental)

Glucose incorporation by *Treponema pallidum*
J. T. BARBIERI AND C. D. COX (1979). *Infection and Immunity*, **24**, 291-293

Comparative behaviour of virulent strains of *Treponema pallidum* and *Treponema pertenue* in gradient cultures of various mammalian cells
A. H. FIELDSTEEL, J. G. STOUT, AND F. A. BECKER (1979). *Infection and Immunity*, **24**, 337-345

Surface mucopolysaccharides of *Treponema pallidum*
T. J. FITZGERALD AND R. C. JOHNSON (1979). *Infection and Immunity*, **24**, 244-251

Relationship of *Treponema pallidum* to acidic mucopolysaccharides
T. J. FITZGERALD, R. C. JOHNSON, AND D. M. FITZI (1979). *Infection and Immunity*, **24**, 252-260

Mucopolysaccharides of *Treponema pallidum*
T. J. FITZGERALD AND R. C. JOHNSON (1979). *Infection and Immunity*, **24**, 261-268

Gonorrhoea (Clinical)

Laboratory-acquired gonococcal conjunctivitis
S. C. BRUINS AND R. R. TIGHT (1979). *Journal of the American Medical Association*, **241**, 274

Rheumatic fever and gonococcal pharyngitis in an adult
S. CHERIAN, M. R. TABATABAI, AND W. A. CUMMINGS (1979). *Southern Medical Journal*, **72**, 319-321

The arthritis of rheumatic fever in adults may mimic acute gonococcal arthritis. To further characterise this clinical picture the features of six patients presenting with the migratory polyarthritis of acute rheumatic fever have been analysed. Of two men and four women, age range 18-43 years, in five the initial clinical impression was gonococcal arthritis. In all patients, however, the diagnosis of acute rheumatic fever was subsequently established. Characteristics of acute rheumatic fever not commonly described included tenosynovitis in all six and an erythematous rash in three. In three patients synovial fluid WBC exceeded 28×10^9/l, with more than 90% neutrophils. In five of the six patients gonococcal arthritis was ruled out by appropriate studies and by failure to respond to antibiotics in all patients. The one patient with serum antigonococcal antibodies had gonococcal pharyngitis and acute rheumatic fever.

Authors' summary

Gonorrhoea (Microbiology)

Hen fluorescein-labeled gonococcal lipopolysaccharide antibody in the delayed fluorescent antibody technique for the confirmation of *Neisseria gonorrhoeae*
F. E. ASHTON, R. A. LEITCH, M. B. PERRY, R. WALLACE, AND B. B. DIENA (1979). *Journal of Clinical Microbiology*, **9**, 323-328

A fluorescent antibody reagent (termed anti-LPS conjugate) was prepared from sera obtained from hens immunised with gonococcal R-type lipopolysaccharide. The reagent was absorbed with formalin-treated cells of *Neisseria meningitidis*. The anti-LPS conjugate gave uniform brilliant staining of *Neisseria gonorrhoeae* with little background fluorescence, thus making interpretation and reading of fluorescence simple. The conjugate did not significantly stain cultures of *N. meningitidis, Neisseria lactamica,* non-pathogenic *Neisseria* species, or other Gram-negative bacteria. Several preparations of the conjugate provided the same specificity and reproducibility of staining. The anti-LPS conjugate was compared with Difco Laboratories fluorescent antibody conjugate for staining of *N. gonorrhoeae*. Both conjugates stained cells of the light and dark variants of gonococcal colonial types 1 and 2, as well as cells of colonial types 3 and 4. When used for the confirmation of *N. gonorrhoeae,* the anti-LPS and Difco conjugates stained 426 (98·8%) of 431 and 210 (98·6%) of 213 of the gonococcal cultures respectively. Absorption of the anti-LPS conjugate with R-type lipopolysaccharide removed the staining of gonococci. However, absorption of Difco conjugate with R-type lipopolysaccharide did not remove the staining of gonococci, suggesting that the most of the fluorescein-labelled antibody present in the Difco conjugate is directed to gonococcal cell surface components other than lipopolysaccharide. The results of this study indicate that fluorescein-labelled gonococcal lipopolysaccharide antibody should be a reliable fluorescent antibody reagent for the confirmation of *N. gonorrhoeae.*

Authors' summary

Identification of *Neisseria gonorrhoeae* in liquid fermentation medium
S. HAFIZ, T. O. ODUGBEMI, AND I. GEARY (1979). *Medical Laboratory Sciences*, **36**, 91-94

Using a liquid fermentation medium for the sugar fermentation reactions of *Neisseria gonorrhoeae,* all the 110 strains of gonococci tested produced detectable acid from dextrose only whereas 106 strains gave positive results on standard solid fermentation medium. The medium has the added advantage for clinical laboratories that it does not require incubation in a CO_2 atmosphere. The importance of non-toxic and growth-supporting fermentation media in the identification of gonococci is discussed.

Authors' summary

Classes of antibodies in acute gonorrhoea
C. A. ISON AND A. A. GLYNN (1969). *Lancet*, **1**, 1165-1168

Using an enzyme-linked immunosorbent assay (Elisa) with outer membrane protein as antigen, the authors examined sera from 381 men and 437 women (191 men and 212 women with gonorrhoea; 106 normal men and 131 normal women; 84 men and 94 women who attended a sexually transmitted diseases clinic but who had no evidence of gonococcal infection). The geometric mean serum level of IgG, IgA, and 'secretory' antibodies in patients with gonorrhoea were two to four times those of the normal controls; the difference was most marked in IgG. A significant increase in IgM antibody was noted in the serum from women, but not men, with gonorrhoea.

Although the mean IgG antibody level in serum from normal men and those attending a clinic was similar, the IgA and secretory antibody levels were significantly higher in the latter group of patients; this difference was not found in female patients.

IgA antibody levels in serum from patients who had previously been infected were significantly higher than in serum from those experiencing their first infection.

A. McMillan

Comparative susceptibility of penicillinase-positive and-negative *Neisseria gonorrhoeae* to 30 antibiotics
W. H. HALL, E. A. SCHIERL, AND J. E. MACCANI (1979). *Antimicrobial Agents and Chemotherapy*, **15**, 562-567

The minimum inhibitory concentrations (MICs) of 30 antibiotics were determined by the agar dilution method for 17 penicillinase-positive and 50 penicillinase-negative strains of *Neisseria gonorrhoeae.* The latter included 42 strains that were penicillin susceptible (pen S) (MIC <0·125 μg/ml) and eight strains with intermediate resistance to penicillin (pen I, MIC 0·125-0·5 μg/ml). Two penicillinase-resistant penicillins (methicillin and nafcillin) were inhibitory for penicillin-resistant (pen R) strains. Three new cephalosporins (cefuroxime, cefamandole, cefaclor) and a cephamycin (cefoxitin) were

bacteriostatic (MIC <0·8 μg/ml) for 90% of pen S, pen I, and pen R strains. Pen I strains were more resistant than pen R strains to six of 13 cephalosporins. Rifampicin, erythromycin, spectinomycin, chloramphenicol, and the tetracyclines were inhibitory for both pen S and pen R strains. The minimum bactericidal concentrations of cefuroxime, cefamandole, cefaclor, and cefoxitin were measured for 17 pen R strains and eight pen I strains by serial dilution of the antibiotics in trypticase soy broth supplemented with 1% IsoVitaleX and 1% haemoglobin. All tubes were subcultured after overnight incubation at 37°C. Cefuroxime and cefoxitin were bactericidal at low concentrations (minimum bactericidal concentration <1·0 μg/ml) for 16 of 17 pen R strains and six of eight pen I strains.

Authors' summary

Pharmokinetic determinants of penicillin cure of gonococcal urethritis

H. W. JAFFE, A. L. SCHROETER, G. H. REYNOLDS, A. A. ZAIDI, J. E. MARTIN, AND J. D. THAYER (1979). *Antimicrobial Agents and Chemotherapy,* **15,** 587-591

In a study of the pharmacokinetic determinants of penicillin cure of gonococcal urethritis, 45 male volunteers were experimentally infected with strains of *Neisseria gonorrhoeae* having known *in-vitro* penicillin susceptibility. After developing urethritis, subjects received intramuscular penicillin G and had serum samples obtained serially to determine penicillin concentrations. Using a multiple regression technique, the authors studied patient-associated parameters and parameters of the serum penicillin curves to determine the best predictors of treatment results. Cure was best predicted by the time the serum penicillin concentration remained above three to four times the penicillin minimum inhibitory concentration of the infecting strain (probability of correct classification, >0·80). Those cured had serum penicillin concentrations which remained in this range for means of 7-10 h. The findings confirm principles of antimicrobial therapy derived from animal models.

A. McMillan

Antibiotic susceptibility of *Neisseria gonorrhoeae* strains from Europe and Asia

P. PIOT, E. VAN DYCK, J. COLAERT, J.-P. URSI, E. BOSMANS, AND A. MEHEUS (1979). *Antimicrobial Agents and Chemotherapy,* **15,** 535-539

In-vitro antimicrobial activity of piperacillin and seven other β-lactam antibiotics against *Neisseria gonorrhoeae* and *Haemophilus influenzae* including β-lactamase-producing strains

C. THORNSBERRY AND C. N. BAKER (1979). *Journal of Antimicrobial Chemotherapy,* **5,** 137-142

Pharyngeal *Neisseria gonorrhoeae:* coloniser or pathogen?

J. WALLIN AND M. S. SIEGEL (1979). *British Medical Journal,* **1,** 1462-1463

Molecular characterization of a small *Haemophilus influenzae* plasmid specifying β-lactamase and its relationship to R factors from *Neisseria gonorrhoeae*

R. LAUFS, P. M. KAULFERS, G. JAHN, AND V. TESCHNER (1979). *Journal of General Microbiology,* **111,** 223-231

In-vitro activity of HR 756, a new cephalosporin against *Neisseria gonorrhoeae*

P. R. MURRAY, J. L. CHRISTMAN, AND G. MEDOFF (1979). *Antimicrobial Agents and Chemotherapy,* **15,** 452-454

Penicillinase-producing *Neisseria gonorrhoeae.* New York City 1976-1978

Y. M. FELMAN AND R. SNYDER (1979). *New York State Journal of Medicine,* **79,** 697-699

Acridine orange staining of urethral and cervical smears for the diagnosis of gonorrhoea

U. FORSUM AND A. HALLEN (1979). *Acta Dermatovenerologica (Stockholm),* **59,** 281-282

Comparison of three methods for identification of pathogenic *Neisseria* species

P. C. APPELBAUM AND R. B. LAWRENCE (1979). *Journal of Clinical Microbiology,* **9,** 598-600

Complement-enhanced immunity to infection with *Neisseria gonorrhoeae* in mice

J. R. ARKO, K. H. WONG, F. J. STEURER, AND W. O. SCHALLA (1979). *Journal of Infectious Diseases,* **139,** 569-574

Nuclease enhancement of specific cell agglutination in a serodiagnostic test for *Neisseria gonorrhoeae*

R. J. ARKO, K. H. WONG, AND W. L. PEACOCK (1979). *Journal of Clinical Microbiology,* **9,** 517-519

Ngo II,* a restriction endonuclease from *Neisseria gonorrhoeae

D. J. CLANTON, W. S. RIGGSBY, AND R. V. MILLER (1979). *Journal of Bacteriology,* **137,** 1299-1307

Type-14 pneumococcal vaccine for prevention of gonorrhoea (letter)

B. B. DIENA, F. E. ASHTON, AND M. B. PERRY (1979). *Lancet,* **1,** 1037

Purification by affinity chromatography and properties of a β-lactamase isolated from *Neisseria gonorrhoeae*

L. A. ERIQUEZ AND R. F. D'AMATO (1979). *Antimicrobial Agents and chemotherapy,* **15,** 229-234

Gonorrhoea (Therapy)

A clinical dose-response study of bacampicillin in uncomplicated gonorrhoea

S. BENGTSSON, G. ERIKSON, L-O. KALLINGS, I. MOBERG, E. SANDSTROM, J. WALLIN, AND G. WALLMARK. *Journal of Antimicrobial Agents and Chemotherapy,* **5,** 211-218

In a double-blind study of dose-response, 883 patients with uncomplicated gonorrhoea were given single oral doses of 400, 800, or 1600 mg bacampicillin, with 1 g probenecid. Doses of 800 and 1600 mg were equally effective, giving negative culture results in 98·2% and 99·7% of patients respectively; 400 mg gave negative culture results in 95·2%. The differences between the lowest dose and the two others were statistically significant. In patients with less sensitive strains, the highest dose was more effective. It is concluded that a single dose of bacampicillin 800 mg plus probenecid 1 g was effective in uncomplicated gonorrhoea with fully ampicillin-sensitive strains. In patients with gonococci showing reduced sensitivity to ampicillin the best results (96·3%) were achieved with the double dose of bacampicillin.

Authors' summary

A trial of minocycline given after exposure to prevent gonorrhea

W. O. HARRISON, R. R. HOOPER, P. J. WIESNER, AND OTHERS (1979). *New England Journal of Medicine,* **300,** 1074-1078

In an evaluation of antibiotic prophylaxis against gonorrhoea, 1080 men were given

200 mg of oral minocycline or placebo after sexual intercourse with prostitutes in a Far Eastern port. Later, at sea, gonococcal infection was detected in 57 of 565 men given placebo and 24 of 515 men given minocycline ($P<0{\cdot}001$). Minocycline prophylaxis completely prevented infection by gonococci susceptible to 0·75 μg or less of tetracycline/ml, reduced the risk of infection or prolonged the incubation period in men exposed to gonococci susceptible to 1·0-2·0 μg/ml, but did not prevent infection or prolong incubation in men exposed to gonococci resistant to 2·0 μg. Minocycline did not increase the proportion of asymptomatic infections. Minocycline prophylaxis would probably have limited the effectiveness as a public health measure because of the tendency to select resistant gonococci.

A. McMillan

Treatment of gonorrhoea (Editorial)
W. McCORMACK (1979). *Annals of Internal Medicine,* **90,** 845-846

Center for Disease Control Recommended Treatment Schedules 1979. US DEPARTMENT OF HEALTH, EDUCATION, WELFARE, PUBLIC HEALTH SERVICES, ATLANTA, GEORGIA, USA (1979). *Annals of Internal Medicine,* **90,** 809-811

Candidosis

A study of 666 strains of *Candida albicans:* correlation between serotype and susceptibility to 5-fluorocytosine
P. AUGER, C. DUMAS, AND J. JOLY (1979). *Journal of Infectious Diseases,* **139,** 590-594

Candidal vaginitis. A study of the efficacy of a reduced duration treatment with miconazole nitrate
S. R. MAYHEUR AND W. E. SUFFIELD (1979). *Practitioner,* **222,** 564-567

The effect of 5-fluorocytosine in the blastospores and hyphae of *Candida albicans*
A. POLAK AND W. H. WAIN (1979). *Journal of Medical Microbiology,* **12,** 83-97

Genital herpes

Relation of HVH-2 to carcinoma of the cervix
S. M. TOBIN, E. N. FISH, N. B. E. COOTER, AND F. R. PAPSIN (1979). *Obstetrics and Gynecology,* **53,** 553-558

An animal model demonstrated the development of varying degrees of basal cell hyperplasia, metaplasia, and dysplasia following cervicovaginal herpesvirus hominis type 2 (HVH-2) infection. Although the study spanned a period of 30 months, the equivalent of 60 human years, there was no evidence of anaplasia. These results are considered in relation to the role of HVH-2 as an initiator in the multistep process leading to cervical carcinoma.

Authors' summary

Organ culture model for the study of HVH-2 infections in carcinoma of the cervix
S. M. TOBIN, E. N. FISH, W. D. WILSON, AND F. R. PAPSIN (1979). *Obstetrics and Gynecology,* **53,** 559-564

An animal model demonstrated that after cervicovaginal inoculation infective doses of herpesvirus hominis type 2 induced a form of herpetic encephalitis. Immunofluorescent results indicated that there was both neural and haematogenous spread of the herpes infection. The possible role of a latent viral infection in the genesis of an acute disease of the central nervous system is investigated in this experimental system.

Authors' summary

Genital herpes simplex virus (HSV) isolation during pregnancy
D. A. BAKER AND S. A. PLOTKIN (1979). *Obstetrics and Gynecology,* **53** (Supplement), 95-125

Eight pregant women from whom herpes virus hominis had been isolated were studied. Viral culture of material from the cervix and vulva was undertaken at intervals. It was shown that, in each case, cultures gave negative results as the pregnancy progressed. Each child was delivered vaginally; none developed lesions of neonatal herpes.

A. McMillan

Ascending infection following cervicovaginal exposure to herpesvirus hominis type 2
E. N. FISH, S. M. TOBIN, W. D. WILSON, AND F. R. PAPSIN (1979). *Obstetrics and Gynecology,* **53,** 429-436

Cesarian section and genital herpesvirus infection (editorial)
M. S. AMSTEY, G. R. G. MONIF, A. J. NAHMIAS, AND W. E. JOSEY (1979). *Obstetrics and Gynecology,* **53,** 641-642

Immune control of herpesvirus latency
L. A. BABIAK AND B. T. ROUSE (1979). *Canadian Journal of Microbiology,* **25,** 267-274

Thin-layer immunoassay for determination of antibodies to herpes simplex virus
S. JEANSSON, H. ELWING, AND L. A. NILSSON (1979). *Journal of Clinical Microbiology,* **9,** 317-322

Comparison of indirect haemagglutination and indirect immunofluorescence tests with microneutralisation tests for detection of type-specific herpesvirus hominis antibody
L. D. JOHNSON, D. A. FUCCILLO, H. STALDER, M. A. OXMAN, C. E. O. FRASER, AND D. L. MADDEN (1979). *Journal of Clinical Microbiology,* **9,** 384-390

Persistence, reactivation, and cell transformation by human herpesviruses: herpes simplex 1, 2 (HSV-1, HSV-2), cytomegalovirus (CMV), varicella-zoster (VZC), Epstein-Barr virus (EBV)
J. H. JONCAS (1979). *Canadian Journal of Microbiology,* **25,** 254-260

A rapid technique for distinguishing herpes simplex virus type 1 from type 2 by restriction-enzyme technology
D. M. LONSDALE (1979). *Lancet,* **1,** 849-852

Effect of pyran on latency after herpes simplex virus infections
P. S. MORAHAN, P. F. CLINE, M. C. BREINIG, AND B. K. MURRAY (1979). *Antimicrobial Chemotherapy,* **15,** 547-553

Evaluation of indirect haemagglutination and its inhibition in the differentiation between antibodies to herpes simplex with virus types 1 and 2 for seroepidemiologic studies: use of a II/I index threshold of 85 and an assay of type-specific antibodies
S. S. PRAKASH AND P. SETH (1979). *Journal of Infectious Diseases,* **139,** 524-528

Replication of herpesviruses and latency
L. J. ROSENTHAL (1979). *Canadian Journal of Microbiology,* **25,** 239-244

Other sexually transmitted diseases

Prevention of type B hepatitis
J. H. HOOFUGLE (1979). *Gastroenterology,* **76,** 1483-1485

Latency and activation of cytomegalovirus in man and mice
S. MONTPLAISIR (1979). *Canadian Journal of Microbiology,* **25,** 261-266

Miscellaneous

Quantitative bacteriology of the vaginal flora in vaginitis
M. E. LEVISON, I. TRESTMAN, R. QUACH, C. SLADOWSKI, AND C. N. FLORO (1979). *American Journal of Obstetrics and Gynecology,* **133,** 139-144

Vaginal flora was studied quantitatively in 29 sexually active women between 16 and 33 years to define the role of *Corynebacterium vaginale* in vaginitis. Seventeen women were asymptomatic and 12 complained of symptoms of vaginitis. Seven asymptomatic women had scant secretions: four of these seven had *C. vaginale* at $\log_{10}$ 6-9 cfu/ml, none of whom had 'clue' cells; none had *Trichomonas vaginalis* or *Candida albicans;* six had *Lactobacilli* at $\log_{10}$ 7-9·7 cfu/ml; only one had *Bacteroidaceae* at > $\log_{10}$ 5/ml. Ten asymptomatic women had easily collectable secretions; eight of 10 had *C. vaginale* at $\log_{10}$ 6·5-9·6/ml, three of whom had 'clue' cells; four had *T. vaginalis* and none *C. albicans;* nine had *Lactobacilli* at $\log_{10}$ 7-9·3/ml; four had *Bacteroidaceae* at >$\log_{10}$ 5/ml. Twelve had vaginitis: five of 12 had *C. vaginale* at $\log_{10}$ 7·9-11/ml, one of whom had 'clue' cells; nine had either *T. vaginalis* or *C. albicans* or both and three had no pathogen including *C. vaginale;* 10 had *Lactobacilli* at $\log_{10}$ 7-10/ml; six had *Bacteriodaceae* at >$\log_{10}$/ml. Three had 'clue' cells in absence of *C. vaginale.*

Authors' summary

Behcet's syndrome: a family study and the elucidation of a genetic role
L. BERMAN, B. TRAPPLER, AND T. JENKINS (1979). *Annals of Rheumatic Diseases,* **38,** 118-121

Epidemiologic approach to control of sexually transmitted disease
Y. M. FEHMAN AND J. A. NIKITAS (1979). *New York State Journal of Medicine,* **79,** 745-746

Reliability of a single urine culture in establishing diagnosis of asymptomatic bacteruria in adult males
R. GLECKMAN, A. ESPOSITO, M. CROWLEY, AND G. A. NATSIOS (1979). *Journal of Clinical Microbiology,* **9,** 596-597

Vaginitis
J. K. HURD (1979). *Medical Clinics of North America,* **63,** 423-432

Amine content of vaginal fluid from untreated and treated patients with non-specific vaginitis
C. S. G. KIRK, P. S. FORSYTH, T. M. BUCHANAN, AND K. K. HOLMES (1979). *Journal of Clinical Investigation,* **63,** 828-835

Venereal infections in children
C. Q. McCLELLAND, M. UYEKI, D. ZEMAITYTE, AND D. E. TINKER (1979). *Journal of the American Medical Association,* **241,** 2141